

Attorney's Docket
1231

10/810,088
Customer ID: 24298

IN THE CLAIMS:

Please amend the claims as follows:

1. (currently amended): In ~~a~~ A circuit card stripline Fast Faraday cup system for measuring the structure of a charged particle beam, the system ~~including~~ comprising:
a first groundplane;
a first dielectric layer bonded to the first groundplane;
a conductor bonded to the first dielectric layer, a portion of the conductor used as a beam target;
a second dielectric layer bonded to the conductor by means of a bonding dielectric, the bonding dielectric having the same dielectric constant as the first dielectric layer; and
~~a second an initial~~ groundplane bonded to the second dielectric, the second dielectric and the ~~second~~ initial groundplane having a channel for the unimpeded passage of the beam to the beam target; ~~and~~
~~— a high bandwidth digitizer connected to the conductor, the high bandwidth digitizer electrodynamically matched to the conductor and the beam target;~~
~~— the system additionally comprising;~~
~~— the first groundplane connected to the second initial groundplane by electroplated stitching to prevent the occurrence of a resonance condition between the first and second initial groundplanes.~~
2. (currently amended): The system of claim 1 further including a bias conducting ring located at the channel in the ~~second~~ initial groundplane, and a means for applying a voltage to the bias conducting ring.
3. (currently amended): The system of claim ~~1~~ 7 wherein the conductor is connected to the high bandwidth digitizer by means of a single edge launch connector.
4. (currently amended): The system of claim ~~1~~ 7 wherein the conductor is connected to the high bandwidth digitizer by means of two edge launch connectors.

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5. (currently amended): The system of claim 4 wherein the high bandwidth digitizer is a sampling oscilloscope
6. (currently amended): The system of claim 4 additionally including a vector network analyzer, the vector network analyzer capable of processing a time-delayed, amplified charged-particle-beam-induced signal from the Fast Faraday cup including the steps of
- measuring the frequency response of the cabling, vacuum interconnects, and amplifier between the Fast Faraday cup and the high bandwidth digitizer;
 - Fourier transforming the digitized signal from the high bandwidth digitizer;
 - multiplying the frequency response, Fourier transformed digitized signal, and a window function; and
 - inverse Fourier transforming the multiplied frequency response, Fourier transformed digitized signal and window function result to obtain the calibrated time domain charge distribution in the Faraday cup.
7. (new): The system of claim 1 further including a high bandwidth digitizer connected to the conductor, the high bandwidth digitizer electrodynamically matched to the conductor and the beam target.